We Claim:

1. A variable bandwidth transmission device comprising:
   a) a first input for receiving a message bearing signal;
   b) a second input for receiving a bandwidth control signal characterized by a frequency, the frequency being selectively variable;
   c) a filtering stage for processing the message bearing signal and the bandwidth control signal to generate an output signal characterized by a bandwidth, said filtering stage being responsive to a change of frequency of the bandwidth control signal to alter the bandwidth of the output signal.

2. A variable bandwidth transmission device as defined in claim 1, comprising:
   a) a bandwidth control signal source connected to said second input for supplying the bandwidth control signal;
   b) the message bearing signal characterized by a bandwidth;
   c) a control logic coupled to said bandwidth control signal source for causing said bandwidth control signal source to change the frequency of the bandwidth control signal on the basis of a change of the bandwidth of the message bearing signal.

3. A variable bandwidth transmission device as defined in claim 1, wherein said filtering stage is a spectral shaping characterized by a Nyquist bandwidth, said spectral shaping filtering stage being responsive to a change of frequency of the bandwidth control signal to alter the Nyquist bandwidth of said spectral shaping filtering stage.

4. A variable bandwidth transmission device as defined in

claim 3, wherein said spectral shaping filtering stage includes a first spectral shaping filter and a second spectral shaping filter.

5. A variable bandwidth transmission device as defined in claim 1, wherein said filtering stage includes band pass filters.

6. A variable bandwidth transmission device as defined in claim 5, wherein said filtering stage includes a first mixer having two inputs and an output, the output of said first mixer being coupled to an input of a first band pass filter, one input of said first mixer being coupled to said first input for receiving the message bearing signal, the other input of said first mixer receiving a signal at a first frequency.

7. A variable bandwidth transmission device as defined in claim 6, wherein said filtering stage includes a second mixer having two inputs and an output, one input of said second mixer being coupled to an output of said first band pass filter, one input of said second mixer receiving a signal at a second frequency, the output of said second mixer being coupled to an input of a second band pass filter.

8. A variable bandwidth transmission device as defined in claim 7, wherein said filtering stage includes a third mixer having two inputs and an output, one input of said third mixer being coupled to an output of said second band pass filter, one input of said mixer receiving the signal at the first frequency, the output of said second mixer generating the output signal characterized by a bandwidth.

9. A variable bandwidth transmission device as defined in claim 7, wherein said filtering stage includes a DA converter including a first input for receiving the output of said second band pass, a second input for receiving the signal at the first frequency and an output for releasing the output signal characterized by a bandwidth, the output signal characterized by a bandwidth being an analog signal.

10. A variable bandwidth transmission device as defined in claim 9, wherein said DA converter is characterized by a sampling frequency, the first frequency defining the sampling frequency of said DA converter.

11. A variable bandwidth transmission device as defined in claim 7, including a local oscillator manager including a local oscillator generating a local oscillator signal, said local oscillator manager being operative to generate from the local oscillator signal and from the bandwidth control signal the signal at the first frequency and the signal at the second frequency.

12. A variable bandwidth transmission device as defined in claim 11, wherein said local oscillator manager includes a mixer having two inputs for receiving the bandwidth control signal and the local oscillator signal, respectively and two outputs, coupled respectively to a first band pass filter and to a second band pass filter.

13. A variable bandwidth transmission device as defined in claim 12, wherein the first band pass filter outputs a signal that is the sum of the frequency of the local oscillator signal and the frequency of the bandwidth control signal.

14. A variable bandwidth transmission device as defined in claim 12, wherein said local oscillator manager includes a frequency divider receiving the signal output by said first band pass filter, said frequency divider outputting the signal at the first frequency.

15. A variable bandwidth transmission device as defined in claim 14, wherein said frequency divider divides the frequency of the signal output by said first band pass filter by two.

16. A variable bandwidth transmission device as defined in claim 13, wherein the second band pass filter outputs the signal at the second frequency that is the difference between the frequency of the local oscillator signal and the frequency of the bandwidth control signal.

17. A variable bandwidth transmission device as defined in claim 10, wherein said local oscillator manager includes a single side band up converter.

18. A variable bandwidth transmission device as defined in claim 17, wherein said oscillator manager includes a pair of said single side band up converters, each single side band up converter receiving as input the local oscillator signal and the bandwidth control signal, one of the single side band up converters releasing a signal at a frequency that is the sum of the frequency of the local oscillator signal and the bandwidth control signal and the other single side band up converter releasing a signal at a frequency that is the difference between the frequency of the local oscillator signal and the frequency of the bandwidth control signal.

19. A variable bandwidth transmission device as defined in claim 1, wherein the bandwidth control signal is related to a bandwidth of the message-bearing signal.

20. A variable bandwidth transmission device as defined in claim 19, wherein the bandwidth control signal is related to a bandwidth of the message bearing signal by a function f(X) where "X" is the bandwidth of the message bearing signal, said function being selected in the group consisting of

a) f(X) = A + X, where A is a constant;

b) f(x) = B * X, where B is a constant;

c) f(X) = C * (D + X), where C and D are constants.

21. A variable bandwidth transmission device comprising:

a) a first input, said input receiving a message bearing signal;

b) a second input for receiving a bandwidth control signal characterized by a frequency, the frequency being selectively variable;

c) means for processing the message bearing signal and the bandwidth control signal to generate an output signal characterized by a bandwidth, the means for processing the message-bearing signal being responsive to a change of frequency of the bandwidth control signal to alter the bandwidth of the output signal.

22. A local oscillator manager, comprising:

a) a first input for receiving a bandwidth control signal;

b) a second input for receiving a local oscillator signal;

c) a first single side band up converter for receiving the clock signal and the local oscillator signal for releasing a signal that is the sum of the frequency of the local oscillator signal and the frequency of the

bandwidth control signal;

d) a second single side band up converter for receiving the bandwidth control signal and the local oscillator signal for releasing a signal that is the difference of the frequency of the local oscillator signal and the frequency of the bandwidth control signal.

23. A variable bandwidth reception device comprising:

a) a first input for receiving a message bearing signal;

b) a second input for receiving a bandwidth control signal characterized by a frequency, the frequency being selectively variable;

c) a filtering stage for processing the message bearing signal and the bandwidth control signal to generate an output signal characterized by a bandwidth, said filtering stage being responsive to a change of frequency of the bandwidth control signal to alter the bandwidth of the output signal.

24. A variable bandwidth reception device as defined in claim 24, wherein said filtering stage is a spectral shaping filtering stage that includes a first spectral shaping filter and a second spectral shaping filter.

25. A variable bandwidth reception device as defined in claim 24, wherein said filtering stage includes band pass filters.

26. A variable bandwidth reception device as defined in claim 25, wherein said filtering stage includes a first mixer having two inputs and an output, the output of said first mixer being coupled to an input of a first band pass filter, one input of said first mixer being coupled to

said first input for receiving the message bearing signal, the other input of said first mixer receiving a signal at a first frequency.

27. A variable bandwidth reception device as defined in claim 26, wherein said filtering stage includes a second mixer having two inputs and an output, one input of said second mixer being coupled to an output of said first band pass filter, one input of said second mixer receiving a signal at a second frequency, the output of said second mixer being coupled to an input of a second band pass filter.

28. A variable bandwidth reception device as defined in claim 27, wherein said filtering stage includes a third mixer having two inputs and an output, one input of said third mixer being coupled to an output of said second band pass filter, one input of said mixer receiving the signal at the first frequency, the output of said second mixer generating the output signal characterized by a bandwidth.

29. A variable bandwidth reception device as defined in claim 27, wherein said filtering stage includes an AD converter including a first input for receiving the output of said second band pass filter, a second input for receiving the signal at the first frequency and an output for releasing the output signal characterized by a bandwidth, the output signal characterized by a bandwidth being a digital signal.

30. A variable bandwidth reception device as defined in claim 29, wherein said AD converter is characterized by a sampling frequency, the first frequency defining the sampling frequency of said AD converter.

31. A variable bandwidth reception device as defined in claim 27, including a local oscillator manager including a local oscillator generating a local oscillator signal, said local oscillator manager being operative to generate from the local oscillator signal and from the bandwidth control signal the signal at the first frequency and the signal at the second frequency.

32. A variable bandwidth reception device as defined in claim 31, wherein said local oscillator manager includes a single side band up converter.

33. A variable bandwidth reception device as defined in claim 32, wherein said oscillator manager includes a pair of single side band up converters, each converter receiving as input the local oscillator signal and the bandwidth control signal, one of the single side band up converters releasing a signal at a frequency that is the sum of the frequency of the local oscillator signal and the frequency of the bandwidth control signal and the other single side band up converter releasing a signal at a frequency that is the difference between the frequency of the local oscillator signal and the frequency of the bandwidth control signal.

34. A variable bandwidth reception device as defined in claim 23, wherein the bandwidth control signal is related to a bandwidth of the message-bearing signal.

35. A variable bandwidth transmission device as defined in claim 34, wherein the bandwidth control signal is related to a bandwidth of the message bearing signal by a function f(X) where "X" is the bandwidth of the message bearing signal, said function being selected in the group

consisting of

a) f(X) = A + X, where A is a constant;

b) f(X) = B * X, where B is a constant;

c) f(X) = C * (D + X), where C and D are constants.

36. A communication system comprising:

a) a transmitter as defined in claim 1 in RF communication with a receiver as defined in claim 23.